

Amendment to the Claims:

This listing of claims will replace all prior versions.

Listing of Claims:

1. (currently amended) A process for dehydrogenating ~~a hydrocarbon selected from at least one of:~~

i) ~~paraffinic hydrocarbons having from 2 to 6 carbons, and~~
ii) ~~alkylaromatic hydrocarbons~~ an alkylaromatic hydrocarbon selected from at least one of: ethylbenzene, propylbenzene, isopropyl benzene and methyl benzene; comprising:

contacting a gaseous stream containing at least one of the hydrocarbons with a dehydrogenation catalyst at reaction temperature and in concurrent upward flow through a dehydrogenation riser reactor wherein the average contact time between the hydrocarbon and catalyst within the dehydrogenation riser reactor is from about 0.5 to about 10 seconds, and wherein the catalyst has an average residence time within the dehydrogenation riser reactor from about 0.5 to about 40 seconds; and

transferring the hydrocarbon and catalyst from the dehydrogenation reactor to a separation device wherein the average contact time between the hydrocarbon and catalyst while at reaction temperature in the separation device is less than about 10 seconds.

2. (cancelled)

3. (currently amended) A process of claim [2] 1 wherein the catalyst is gallium-based and the average residence time of the catalyst within the dehydrogenation riser reactor is from about 1.0 to about 12.0 seconds.

4. (currently amended) A process of claim 1 wherein the total average contact time between the hydrocarbon, ~~catalyst and resulting hydrocarbons~~ and catalyst while at reaction temperature in the dehydrogenation riser reactor and separation device is less than about ~~20 seconds~~ 10 seconds.

5. (currently amended) A process of claim 4 wherein the average contact time between the hydrocarbon and the catalyst within the dehydrogenation riser reactor is from about 1 to about 4 seconds, the average contact time between the hydrocarbon and catalyst while at reaction temperature in the separation device is less than about 5 seconds, and the total average contact time in the dehydrogenation riser reactor and separation device is less than about ~~10 seconds~~ 7 seconds.

6-9. (cancelled)

10. (previously presented) A process of claim 1 wherein the temperature within the dehydrogenation reactor is from about 500 to about 800°C, and the pressure is from 25.5 (3.7) to about 446 (64.7) kilopascals (psia) .

11-12. (cancelled)

13. (previously presented) A process of claim 1 wherein catalyst from the separation device is transferred to one of: a catalyst regenerator wherein the catalyst is regenerated and returned to the dehydrogenation reactor, and a recycle loop wherein catalyst is recycled from the separation device back to the dehydrogenation reactor.

14. (previously presented) A process of claim 10 wherein the catalyst from the recycle loop and regenerator are combined and introduced into the dehydrogenation reactor.

15. (previously presented) The process of claim 1 wherein the dehydrogenation catalyst comprises gallium carried by an alumina or alumina silica support.

16. (previously presented) The process of claim 15 wherein the catalyst comprises an alkali or alkaline earth metal selected from at least one of: sodium, lithium, potassium, rubidium, magnesium, calcium, strontium and barium, and further comprises promoter selected from at least one of: manganese and platinum.

17. (currently amended) A process of claim 1 ~~for dehydrogenating a hydrocarbon selected from at least one of:~~

- i) ~~paraffinic hydrocarbons selected from ethane, propane, and butane; and~~
- ii) ~~alkylaromatic hydrocarbons are selected from ethylbenzene, propylbenzene and methylethylbenzene comprising;~~

contacting a gaseous stream containing at least one of the hydrocarbons with a dehydrogenation catalyst comprising gallium carried by an alumina or alumina silica support, at reaction temperature and in upward concurrent flow through a dehydrogenation riser reactor, wherein the average contact time between the hydrocarbon and catalyst within the dehydrogenation riser reactor is from about 1 to about 4 seconds; the catalyst has a average residence time within the dehydrogenation riser reactor from about 1 to about 10 seconds; and the temperature and pressure in the dehydrogenation riser reactor is from about 570 to about 750°C, and from about 41.4 (6.0) to about 308 (44.7) kilopascals (psia); and

transferring the hydrocarbon and catalyst from the dehydrogenation riser reactor to a separation device wherein the average contact time between the hydrocarbon and catalyst while at reaction temperature in the separation device is less than about 3 seconds. ~~and the total average contact time between the hydrocarbon, catalyst and resulting hydrocarbons while at reaction temperature is less than about 7 seconds.~~

18-20. (cancelled).